## ABSTRACT OF THE DISCLOSURE

A computer assisted orthopedic surgery planner software for generation of 3D (three dimensional) solid bone models from two or more 2D (two dimensional) X-ray images of a patient's bone. The computer assisted orthopedic surgery planner software reconstructs the bone contours by starting with a 3D template bone and deforming the 3D template bone to substantially match the geometry of the patient's bone. A surgical planner and simulator module of the computer assisted orthopedic surgery planner software generates a simulated surgery plan showing the animation of the bone distraction process, the type and the size of the fixator frame to be mounted on the patient's bone, the frame mounting plan, the osteotomy/coricotomy site location and the day-by-day length adjustment schedule for each fixator strut. All bone models and surgery plans are shown as 3D graphics on a computer screen to provide realistic, pre-surgery guidance to the surgeon. Post-operative surgical data may be fed back into the computer assisted orthopedic surgery planner software to revise the earlier specified bone distraction trajectory in view of any discrepancy between the pre-operative plan data and the actual, post-operative data. Assistance in planning and carrying out a bone distraction surgery may be provided to remotely-located surgeons via the Internet using the computer assisted orthopedic surgeryplanner software at the service provider's location to generate specific surgical plans and simulation models for each surgeon requesting assistance. A physician-friendly 3D modeling approach in the computer assisted orthopedic surgery planner software according to the present invention reduces the complexities and costs associated with a bone distraction surgery and thus allows more surgeons to practice bone distraction, thereby benefitting more patients in need of bone distraction.